least one other raw material gas at said mixing ratio; ~~and~~

forming a second n-conduction type of gallium nitride group compound semiconductor layer having a low electron concentration and a resistivity which is greater than a resistivity of said first n-conduction type of gallium nitride group compound semiconductor layer, without feeding said silicon-containing gas; and

etching said second n-conduction type of gallium nitride group compound semiconductor layer to expose a surface of said first n-conduction type of gallium nitride group compound semiconductor layer, an n-electrode being formed on said exposed surface of said first n-conduction type of gallium nitride group compound semiconductor layer.

21. (Previously presented) A method for producing a gallium nitride group compound semiconductor according to claim 19, wherein said gallium nitride group compound semiconductor comprises $Al_xGa_{1-x}N$ ($0 \leq x \leq 1$).

22. (Previously presented) A method for producing a gallium nitride group compound semiconductor according to claim 20, wherein said gallium nitride group compound semiconductor comprises $Al_xGa_{1-x}N$ ($0 \leq x \leq 1$).

23. (Previously presented) A method for producing a gallium nitride group compound semiconductor according to claim 19, wherein said gallium nitride group compound semiconductor comprises GaN.

24. (Previously presented) A method for producing a gallium nitride group compound semiconductor according to claim 20, wherein said gallium nitride group compound semiconductor comprises GaN.

25. (Original) A method for producing a gallium nitride group compound semiconductor according to claim 19, wherein said conductivity (1/resistivity) is not less than 3.3/Ωcm.

26. (Original) A method for producing a gallium nitride group compound semiconductor according to claim 21, wherein said conductivity (1/resistivity) is not less than 3.3/Ωcm.

27. (Original) A method for producing a gallium nitride group compound semiconductor according to claim 23, wherein said conductivity (1/resistivity) is not less than 3.3/Ωcm.

28. (Original) A method for producing a gallium nitride group compound semiconductor according to claim 26, wherein said electron concentration is not less than $6 \times 10^{16}/cm^3$.

29. (Original) A method for producing a gallium nitride group compound semiconductor according to claim 27, wherein said electron concentration is not less than $6 \times 10^{16}/cm^3$.

30. (Original) A method for producing a gallium nitride group compound semiconductor according to claim 24, wherein said electron concentration is not less than $6 \times 10^{16}/cm^3$.

31. (Original) A method for producing a gallium nitride group compound semiconductor according to claim 19, wherein said conductivity (1/resistivity) is ranging from 3.3/Ωcm to $1.3 \times 10^2/\Omega cm$.

32. (Original) A method for producing a gallium nitride group compound semiconductor according to claim 21, wherein said conductivity (1/resistivity) is ranging from 3.3/Ωcm to $1.3 \times 10^2/\Omega cm$.

33. (Original) A method for producing a gallium nitride group compound semiconductor according to claim 23, wherein said conductivity (1/resistivity) is ranging from 3.3/Ωcm to $1.3 \times 10^2/\Omega cm$.

34. (Original) A method for producing a gallium nitride group compound semiconductor according to claim 20, wherein said electron concentration is ranging from $6 \times 10^{16}/cm^3$ to $3 \times 10^{18}/cm^3$.

35. (Original) A method for producing a gallium nitride group compound semiconductor according to claim 22, wherein said electron concentration is ranging from $6 \times 10^{16}/cm^3$ to 3 x

$10^{18}/cm^3$.

36. (Original) A method for producing a gallium nitride group compound semiconductor according to claim 24, wherein said electron concentration is ranging from $6 \times 10^{16}/cm^3$ to $3 \times 10^{18}/cm^3$.

37. (Original) A method for producing a gallium nitride group compound semiconductor according to claim 19, wherein said gallium nitride group compound semiconductor is formed on or above a buffer layer which is formed on a sapphire substrate.

38. (Original) A method for producing a gallium nitride group compound semiconductor according to claim 20, wherein said gallium nitride group compound semiconductor is formed on or above a buffer layer which is formed on a sapphire substrate.

39. (Original) A method for producing a gallium nitride group compound semiconductor according to claim 21, wherein said gallium nitride group compound semiconductor is formed on or above a buffer layer which is formed on a sapphire substrate.

40. (Original) A method for producing a gallium nitride group compound semiconductor according to claim 22, wherein said gallium nitride group compound semiconductor is formed on or above a buffer layer which is formed on a sapphire substrate.

41. (Original) A method for producing a gallium nitride group compound semiconductor according to claim 25, wherein said gallium nitride group compound semiconductor is formed on or above a buffer layer which is formed on a sapphire substrate.

42. (Original) A method for producing a gallium nitride group compound semiconductor according to claim 28, wherein said gallium nitride group compound semiconductor is formed on or above a buffer layer which is formed on a sapphire substrate.

43. (Original) A method for producing a gallium nitride group compound semiconductor

according to claim 31, wherein said gallium nitride group compound semiconductor is formed on or above a buffer layer which is formed on a sapphire substrate.

44. (Original) A method for producing a gallium nitride group compound semiconductor according to claim 34, wherein said gallium nitride group compound semiconductor is formed on or above a buffer layer which is formed on a sapphire substrate.

45. (Original) A method for producing a gallium nitride group compound semiconductor according to claim 37, wherein said buffer layer is formed on said sapphire substrate by using an organometallic compound vapor phase epitaxy at a growth temperature lower than that of said gallium nitride group compound semiconductor.

46. (Original) A method for producing a gallium nitride group compound semiconductor according to claim 38, wherein said buffer layer is formed on said sapphire substrate by using an organometallic compound vapor phase epitaxy at a growth temperature lower than that of said gallium nitride group compound semiconductor.

47. (Original) A method for producing a gallium nitride group compound semiconductor according to claim 39, wherein said buffer layer is formed on said sapphire substrate by using an organometallic compound vapor phase epitaxy at a growth temperature lower than that of said gallium nitride group compound semiconductor.

48. (Original) A method for producing a gallium nitride group compound semiconductor according to claim 40, wherein said buffer layer is formed on said sapphire substrate by using an organometallic compound vapor phase epitaxy at a growth temperature lower than that of said gallium nitride group compound semiconductor.

49. (Original) A method for producing a gallium nitride group compound semiconductor according to claim 41, wherein said buffer layer is formed on said sapphire substrate by using an organometallic compound vapor phase epitaxy at a growth temperature lower than that of said gallium nitride group compound semiconductor.

50. (Original) A method for producing a gallium nitride group compound semiconductor according to claim 42, wherein said buffer layer is formed on said sapphire substrate by using an organometallic compound vapor phase epitaxy at a growth temperature lower than that of said gallium nitride group compound semiconductor.

51. (Original) A method for producing a gallium nitride group compound semiconductor according to claim 43, wherein said buffer layer is formed on said sapphire substrate by using an organometallic compound vapor phase epitaxy at a growth temperature lower than that of said gallium nitride group compound semiconductor.

52. (Original) A method for producing a gallium nitride group compound semiconductor according to claim 44, wherein said buffer layer is formed on said sapphire substrate by using an organometallic compound vapor phase epitaxy at a growth temperature lower than that of said gallium nitride group compound semiconductor.

~~53-118. (Canceled)~~

119. (Previously presented) A method for producing a gallium nitride group compound semiconductor according to claim 20, wherein said carrier concentration ranges from 1 x $10^{17}/cm^3$ to 1 x $10^{19}/cm^3$.

120. (Previously presented) A method for producing a gallium nitride group compound semiconductor according to claim 22, wherein said carrier concentration ranges from 1 x $10^{17}/cm^3$ to 1 x $10^{19}/cm^3$.

121. (Previously presented) A method for producing a gallium nitride group compound semiconductor according to claim 24, wherein said carrier concentration ranges from 1 x $10^{17}/cm^3$ to 1 x $10^{19}/cm^3$.

122. (Previously presented) A method for producing a gallium nitride group compound semiconductor according to claim 119, wherein said gallium nitride group compound semiconductor is formed on or above a buffer layer which is formed on a sapphire substrate.

123. (Previously presented) A method for producing a gallium nitride group compound semiconductor according to claim 120, wherein said gallium nitride group compound semiconductor is formed on or above a buffer layer which is formed on a sapphire substrate.

124. (Previously presented) A method for producing a gallium nitride group compound semiconductor according to claim 121, wherein said gallium nitride group compound semiconductor is formed on or above a buffer layer which is formed on a sapphire substrate.

125. (Previously presented) A method for producing a gallium nitride group compound semiconductor according to claim 122, wherein said buffer layer is formed on said sapphire substrate by using an organometallic compound vapor phase epitaxy at a growth temperature lower than that of said gallium nitride group compound semiconductor.

126. (Previously presented) A method for producing a gallium nitride group compound semiconductor according to claim 123, wherein said buffer layer is formed on said sapphire substrate by using an organometallic compound vapor phase epitaxy at a growth temperature lower than that of said gallium nitride group compound semiconductor.

127. (Previously presented) A method for producing a gallium nitride group compound semiconductor according to claim 124, wherein said buffer layer is formed on said sapphire substrate by using an organometallic compound vapor phase epitaxy at a growth temperature lower than that of said gallium nitride group compound semiconductor.

128. (Currently amended) A method for producing a gallium nitride group compound semiconductor according to claim 19, wherein said second n-conduction type of gallium nitride group compound semiconductor layer is formed on said first n-conduction type of gallium nitride group compound semiconductor layer.

129. (Currently amended) A method for producing a gallium nitride group compound semiconductor according to claim ~~19~~, further comprising:

after said forming said first n-conduction type of gallium nitride group compound semiconductor layer and before said forming said second n-conduction type of gallium nitride group compound semiconductor layer, stopping a flow of said silicon-containing gas.

130. (Currently amended) A method for producing a gallium nitride group compound semiconductor according to claim ~~19~~, wherein said forming said first n-conduction type of gallium nitride group compound semiconductor layer comprises controlling said resistivity of said first n-conduction type of gallium nitride group compound semiconductor layer to be within a range from 3×10^{-1} Ωcm to 8×10^{-3} Ωcm.

131. (Currently amended) A method for producing a gallium nitride group compound semiconductor according to claim ~~130~~, wherein said resistivity of said first n-conduction type of gallium nitride group compound semiconductor layer is controlled by varying a flow rate of said silicon-containing gas.

132. (New) A method of fabricating a light-emitting element, comprising:

forming a gallium nitride group compound semiconductor that is produced by using an organometallic compound vapor phase epitaxy, comprising:

setting a mixing ratio of a silicon-containing gas to at least one other raw material gas during said vapor phase epitaxy at a desired value in a range over which a conductivity of the gallium nitride group compound semiconductor increases substantially proportionally with said mixing ratio so as to obtain a desired conductivity (1/resistivity) of said gallium nitride group compound semiconductor;

forming a first n-conduction type of gallium nitride group compound semiconductor layer with a high electron concentration by feeding said silicon-containing gas and said at least one other raw material gas at said mixing ratio;

forming a second n-conduction type of gallium nitride group compound semiconductor layer with a low electron concentration and having a resistivity which is

greater than a resistivity of said first n-conduction type of gallium nitride group compound semiconductor layer, without feeding said silicon-containing gas; and

etching said second n-conduction type of gallium nitride group compound semiconductor layer to expose a surface of said first n-conduction type of gallium nitride group compound semiconductor layer; and

forming an n-electrode on said exposed surface of said first n-conduction type of gallium nitride group compound semiconductor layer.

133. (New) The method of fabricating a light-emitting element according to claim 132, further comprising:

forming an insulating gallium nitride group compound semiconductor layer on said second n-conduction type of gallium nitride group compound semiconductor layer, said n-electrode being formed on an upper surface of said insulating gallium nitride group compound semiconductor layer.

134. (New) The method of fabricating a light-emitting element according to claim 133, further comprising:

etching said insulating gallium nitride group compound semiconductor layer to expose a surface of said second n-conduction type of gallium nitride group compound semiconductor layer, said etching said second n-conduction type of gallium nitride group compound semiconductor layer comprising etching said exposed surface of said second n-conduction type of gallium nitride group compound semiconductor layer.

135. (New) The method of fabricating a light-emitting element according to claim 133, further comprising:

forming an electrode adjacent to said n-electrode on said upper surface of said insulating gallium nitride group compound semiconductor layer.

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